the light source and the light irradiation position, and said light detection means includes an optical fiber for connecting a photodetector and the light detection position.

33.(Once Amended) A living body optical measurement system according to claim 28, comprising a light irradiation position, a first detection position, a second detection position, a third detection position set on a half line extending from its origin at the light irradiation position to pass through the first detection position, and a fourth detection position set on a half line extending from its origin at the light irradiation position to pass through the second detection position, wherein a logarithmic difference signal (first logarithmic difference signal) between light detection signals detected at said first and third detection positions and a logarithmic difference signal (second logarithmic difference signal) between transmitting light intensity levels detected at said second and fourth detection positions are measured, and a difference signal between said first and second logarithmic difference signals is measured.

34.(Once Amended) A living body optical measurement system according to claim 28, comprising:

first light irradiation means for irradiating light on the surface of the living body;

first irradiation light intensity detection means for detecting the irradiation light intensity from said first light irradiation means;

second light irradiation means for irradiating light on the surface of the living body;

second irradiation light intensity detection means for detecting the irradiation light intensity from said second light irradiation means;

light detection means for detecting the intensity of light attributable to said first light irradiation means or said second light irradiation means and transmitting through the interior of the living body so as to go out of the surface of the living body;

means for generating a logarithmic difference signal (first logarithmic difference signal) between an output of said first irradiation light intensity detection means and an output of said light detection means attributable to said first light irradiation means;

means for generating a logarithmic differences signal (second logarithmic difference signal) between an output of said second irradiation light intensity detection means and an output of said light detection means attributable to said second light irradiation means; and

means for measuring a difference signal between said first and second logarithmic difference signals.

35.(Once Amended) A living body optical measurement system according to claim 28, wherein irradiation light from said light irradiation means is modulated in intensity, and only a frequency component of the detection signal from said light detection means which equals a frequency for the intensity modulation is extracted for use by a lock-in amplifier or through a Fourier transform processing.

36.(Once Amended) A living body optical measurement system according to claim 28, wherein the number m of wavelengths of irradiation light equals the number n of light irradiation positions, and n×m kinds of intensity modulation frequencies for the light source are used.

37.(Once Amended) A living body optical measurement method using the living body optical measurement system as recited in claim 28, wherein measurement is carried out by setting the light irradiation position and the light detection positions on the surface of the living body such that a signal from a region where extinction characteristics changes locally on the basis of a change in hemodynamic movement in the living body is contained in a light intensity signal detected at at least one light detection position but is not contained in a light intensity signal detected at at least another light detection position.

38.(Once Amended) A living body optical measurement system according to claim 28, wherein after a logarithmic difference signal between different sites of detection position is so adjusted as to be zero under the condition that the change does not occur at the region where extinction characteristics changes locally in the living body, measurement is started and a displacement value of the difference signal is used as the measured signal.

Please add new claims 39-46, as follows.

39.(New) A living body optical measurement system according to claim 29, comprising a logarithmic amplifier and a differential amplifier, wherein the light detection signal is logarithmically amplified and then a logarithmic difference signal is generated by the differential amplifier.

40.(New) A living body optical measurement system according to claim 29, wherein said light irradiation means includes an optical fiber for connecting the light source and the light irradiation position, and said light detection means includes an optical fiber for connecting a photodetector and the light detection position.

41.(New) A living body optical measurement system according to claim 29, comprising a light irradiation position, a first detection position, a second detection position, a third detection position set on a half line extending from its origin at the light irradiation position to pass through the first detection position, and a fourth detection position set on a half line extending from its origin at the light irradiation position to pass through the second detection position, wherein a logarithmic difference signal (first logarithmic difference signal) between light detection signals detected at said first and third detection positions and a logarithmic difference signal (second logarithmic difference signal) between transmitting light intensity levels detected at said second and fourth detection positions are measured, and a difference signal between said first and second logarithmic difference signals is measured.

42.(New) A living body optical measurement system according to claim 29, comprising:

first light irradiation means for irradiating light on the surface of the living body;

first irradiation light intensity detection means for detecting the irradiation light intensity from said first light irradiation means;

second light irradiation means for irradiating light on the surface of the living body;

second irradiation light intensity detection means for detecting the irradiation light intensity from said second light irradiation means;

light detection means for detecting the intensity of light attributable to said first light irradiation means or said second light irradiation means and transmitting through the interior of the living body so as to go out of the surface of the living body;

means for generating a logarithmic difference signal (first logarithmic difference signal) between an output of said first irradiation light intensity detection means and an output of said light detection means attributable to said first light irradiation means;

means for generating a logarithmic differences signal (second logarithmic difference signal) between an output of said second irradiation light intensity detection means and an output of said light detection means attributable to said second light irradiation means; and

means for measuring a difference signal between said first and second logarithmic difference signals.

43.(New) A living body optical measurement system according to claim 29, wherein irradiation light from said light irradiation means is modulated in intensity, and only a frequency component of the detection signal from said light detection means which equals a frequency for the intensity modulation is extracted for use by a lock-in amplifier or through a Fourier transform processing.

44.(New) A living body optical measurement system according to claim 29, wherein the number m of wavelengths of irradiation light equals the number n of light irradiation positions, and n×m kinds of intensity modulation frequencies for the light source are used.

45.(New) A living body optical measurement method using the living body optical measurement system as recited in claim 29, wherein measurement is carried out by setting the light irradiation position and the light detection positions on the surface of the living body such that a signal from a region where extinction characteristics changes locally on the basis of a change in hemodynamic movement in the living body is contained in a light intensity signal detected at at least one light detection position but is not contained in a light intensity signal detected at at least another light detection position.

46.(New) A living body optical measurement system according to claim 29, wherein after a logarithmic difference signal between different sites of detection position is so adjusted as to be zero under the condition that the change does not

occur at the region where extinction characteristics changes locally in the living body, measurement is started and a displacement value of the difference signal is used as the measured signal.

IN THE ABSTRACT:

Please delete the Abstract filed with the application, and enter the following replacement Abstract therefor.

--ABSTRACT OF THE DISCLOSURE

In an optical measurement system and imaging method adapted to measure *in vivo* information in a living body without harming the living body, light rays of a plurality of wavelengths which are modulated in intensity with a plurality of different frequencies are irradiated on a plurality of irradiation positions on the surface of a living body, and time-variable changes in living body transmitting light intensity levels corresponding to the respective wavelengths and the respective irradiation positions are measured at different positions on the surface of the living body. Light is utilized to image the results of the measurements, in which the measuring time is shortened by estimating fluctuation attributable to the living body, and the presence or absence of a change in measured signal can be decided easily by displaying an estimation signal and a measured signal at a time.--